

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

DR. PAULA SMALL,

Plaintiff,

-against-

NOBEL BIOCARE USA, LLC, et al.,

Defendants.

05 Civ. 3225 (RJH)

06 Civ. 683 (RJH)

**MEMORANDUM OPINION**  
**AND ORDER**

Richard J. Holwell, District Judge:

In these patent-infringement actions, plaintiff Dr. Paula Small alleges that a number of defendants infringed U.S. Patent No. 5,580,246 (the “‘246 Patent”) and U.S. Patent No. RE38,945 (the “‘945 Patent”). The patents describe a method to rehabilitate a damaged dental implant and an improved dental implant designed to prevent the crown mounted on it from rotating. Pursuant to a December 21, 2010 scheduling order, the parties identified claim language that required construction, completed simultaneous briefing, and submitted opening, response, and reply briefs. On July 21, 2011, the Court held a hearing in which the parties presented their proposed constructions of the disputed claim terms. *See generally Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996). This Opinion sets out the Court’s construction of those terms.

## **BACKGROUND**

### **I. Factual Background<sup>1</sup>**

#### **A. Dental Implants**

Both the '246 Patent and the '945 Patent disclose improved dental implants. Dental implants, typically made of titanium, serve as anchors for artificial teeth. A surgeon installs an implant by making an incision into the patient's gum to expose the jaw bone, drilling into the bone to form a hole, and screwing the implant into the hole. Over a period of months, the implant integrates into the bone through a process known as osseointegration.

Typically, the implant has a hole at its "proximal end," the end near the gum surface. After osseointegration, the gum is re-opened to expose this hole, and an abutment is attached to the hole, extending to a level at or above the gum surface. The protruding end of the abutment, called a boss, is designed for attachment of a false tooth. To prevent the false tooth from rotating, the boss requires a non-round shape, and a hexagonal shape has typically been used. A corresponding recess exists in the false tooth so that the tooth and the abutment lock together. Variations exist, including instances where the crown is attached directly to a non-round boss of the implant and held directly to the implant without use of an intermediate abutment. (*See generally* '246 Patent, cols.1-2.)

The problem to which the '246 and '945 Patents are addressed is that over time, rotational forces from chewing or other activity can wear down the corners on the boss. This diminishes its ability to prevent rotation of the false tooth, and causes a loss of functionality in the false tooth. The '246 Patent teaches both a method to rehabilitate a damaged implant and an

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<sup>1</sup> The description provided in this section is not intended to be comprehensive or to be a construction of any disputed claim terms. Rather, it is intended to provide background useful to a proper understanding of the discussion to follow.

improved implant based on the insights gleaned from the rehabilitative method. The '945 Patent claims additional improved implants.

### **B. The '246 Patent**

Small is one of the three named inventors of the '246 Patent, titled "Dental Implants and Methods for Extending Service Life," as well as its assignee and sole owner. The patent "provide[s] a method for rehabilitating the proximal end of an implant so as to prevent relative rotation of abutment or crown elements after the initial attachment means has failed." ('246 Patent col.2 ll.61-65.) The patent also "provide[s] an improved dental implant that reduces the hazards of damage to the implant attachment protrusion during installation and of damage due to crown rotation during normal usage over the life of the prosthesis." (*Id.* col.2 l.66-col.3 l.3.)

The method taught by the patent is one in which a dentist forms radial slots or other indentations in the outer surface of the implant and modifies the abutment or crown to have corresponding protrusions such that the engagement between the protrusions and the slots prevents rotation between the implant and the attachments. Among the preferred embodiments of the invention is one that has a boss generally square in cross section, which allows for greater resistance to rotation even when the corners or edges of the protrusion become rounded. The implant can also include radial slots for additional resistance to rotation. (*See generally* '246 Patent col.3 ll.7-52.)

The parties' current dispute focuses on language in claims 11, 12, and 22 of the patent. Claim 11, as amended after reexamination, recites:

A dental implant for insertion in the jaw bone of a patient, comprising:

an elongated body having a longitudinal axis and a proximal surface generally transverse to said longitudinal axis, said proximal surface is a portion of a radially extending flange on said body, said flange having thickness, a boss extending from said proximal surface, said boss having a transverse face and a

non-round cross section as viewed transversely along said axis, and an axial hole in said body, at least one slot penetrating at least one of said proximal surface and said transverse face of said implant and terminating within the thickness of said flange.

(‘246 Patent Ex Parte Reexamination Certificate col.1 l.26-col.2 l.11.) Claim 12 recites “[a] dental implant as in claim 11, wherein said at least one slot has a radially oriented length and penetrates said at least one of said proximal surface and said transverse face in an axial direction.” (‘246 Patent col.13 ll.19-22.) And claim 22 recites:

A dental implant for insertion in the jaw bone of a patient, the dental implant comprising:

an elongated body having a longitudinal axis and a proximal surface generally transverse to the longitudinal axis, the proximal surface forming a portion of a flange extending from the body and having thickness;  
a boss having a transverse face extending from the proximal surface; and  
a plurality of slots penetrating both the proximal surface and the transverse face of the implant, a given one of the plurality of slots terminating within the thickness of the flange.

(‘246 Patent Ex Parte Reexamination Certificate col.2 ll.13-25.)

### **C. The ‘945 Patent**

The ‘945 Patent, issued January 24, 2006, is a reissue of U.S. Patent No. 5,810,590, which was a continuation-in-part of the ‘246 Patent. In addition to the disclosed material in the ‘246 Patent, the ‘945 Patent discloses implants with additional non-round boss designs, including squares, hexagons, pentagons, trefoils, and bosses with flutes, all of which are designed to prevent rotation. The ‘945 Patent also advises: “It should also be understood that a reversal of features is intended to fall within the inventions [sic] scope. Thus any boss cross-section which has been described as protruding from the flange surface 44 may also be formed (and viewed in the Figures) as a recess in the surface 44.” (‘945 Patent col.13 ll.58-62.) Although the specification of the ‘945 Patent discloses the rehabilitation method just as the ‘246 Patent did, its

twenty-seven claims are dedicated to covering different dental implants with the variety of bosses and recesses disclosed in the specification.

## **II. Procedural Background**

Small first filed suit in this Court on October 8, 2004, against Nobel Biocare USA, Inc., Nobel Biocare Holding AG, Implant Innovations, Inc. (“Implant Innovations”), and Biomet, Inc. (“Biomet”), alleging infringement of the ‘246 Patent. (*See Small v. Nobel Biocare USA, Inc., et al.*, 04 Civ. 7994, ECF No. 1.) That action was voluntarily dismissed on February 4, 2005, pursuant to Federal Rule of Civil Procedure 41(a)(1)(i). (*Id.*, ECF No. 5.)

Small then commenced the first of the above-captioned actions on March 24, 2005 (the “First Action”), again alleging infringement of the ‘246 Patent against the same set of defendants, except that Nobel Biocare USA, Inc. was now named as Nobel Biocare USA, LLC (“Nobel”). (*See Small v. Nobel Biocare USA, LLC, et al.*, 05 Civ. 3225, ECF No. 1.) On February 3, 2006, by stipulation, the case was stayed pending reexamination of the ‘246 Patent, which was ordered by the United States Patent and Trademark Office (“USPTO”) on November 29, 2005. (*See id.*, ECF No. 52.) The USPTO issued a reexamination certificate on January 13, 2009, and the matter was restored to this Court’s active calendar. (*Id.*, ECF No. 56.) On July 15, 2009, Small, Implant Innovations, and Biomet dismissed all claims and counterclaims between them pursuant to Fed. R. Civ. P. 41(a). (*Id.*, ECF No. 67.) Small dismissed all claims against Nobel Biocare Holding AG on October 7, 2009, leaving Nobel as the sole defendant in the First Action. (*Id.*, ECF No. 68.)

Meanwhile, Small had commenced the second of the above-captioned actions on January 30, 2006 (the “Second Action”), against Nobel, Nobel Biocare Holding AG, Nobel Biocare AB, Implant Innovations, and Biomet, alleging infringement of the ‘945 Patent. (*See Small v. Nobel*

*Biocare USA, LLC, et al.*, 06 Civ. 683, ECF No. 1.) That case was consolidated for pretrial purposes with the First Action on March 15, 2006. (*See* 05 Civ. 3225, ECF No. 53.) Small amended her complaint on July 28, 2009, to add Henry Schein, Inc., Camlog USA, Inc. (collectively with Henry Schein, Inc., “Camlog”), Camlog Technologies AG, Camlog Holding AG, Altatec GmbH, Neoss Ltd., Neoss Inc., Blue Sky Bio, LLC, Implant Direct Mfg. LLC, and Southern Implants, Inc. as defendants. (06 Civ. 683, ECF No. 11.) By the same stipulation dismissing claims against it in the First Action, Nobel Biocare Holding AG was dismissed from the Second Action on October 7, 2009. (*Id.*, ECF No. 48.) Small filed a second amended complaint on November 16, 2009, which included as defendants Nobel, Nobel Biocare AB, Camlog, Camlog Biotechnologies AG, Camlog Holding AG, Altatec GmbH, Neoss Ltd., Neoss Inc., Implant Direct Mfg. LLC d/b/a Implant Direct, LLC, Southern Implants, Inc., Megagen USA, Inc., and Megagen Co., Ltd. (Implant Direct Mfg. LLC, Southern Implants, Inc., Megagen USA, Inc., and Megagen Co., Ltd. are hereinafter collectively referred to as “Implant Direct”). (*Id.*, ECF No. 64.) Small voluntarily dismissed her claims against Altatec GmbH, Camlog Biotechnologies AG, and Camlog Holding AG on August 9, 2010, (*id.*, ECF No. 146), and settled her claims with Neoss Ltd. and Neoss Inc. on May 2, 2011, (*id.*, ECF No. 187), leaving Nobel,<sup>2</sup> Camlog, and Implant Direct as defendants in the Second Action.

Beginning April 15, 2011, Nobel and Small filed claim construction briefs regarding the ‘246 Patent; and Nobel, Camlog, Implant Direct, and Small briefed claim construction regarding the ‘945 Patent. The Court held a *Markman* hearing on July 21, 2011. This Opinion resolves the claim construction issues presented in the briefing and at the hearing.

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<sup>2</sup> For convenience’s sake, this opinion will hereinafter use “Nobel” to refer to Nobel Biocare USA, LLC both individually and collectively with Nobel Biocare AB.

## DISCUSSION

### I. Legal Standard

The standards governing the construction of patent claims are familiar and well-established. *See generally Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (summarizing and restating doctrine). Because patents are addressed to practitioners in the field of the patented invention, a court should usually construe claim language consistent with its “ordinary and customary meaning” to a person of ordinary skill in the relevant art on the effective filing date of the patent application. *Id.* at 1312-13. “Such a person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field.” *Id.* at 1313 (quoting *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998)).

To determine the “ordinary and customary meaning” of a claim term, a court should first consult the intrinsic evidence—the claims, the specification, and the prosecution history. *See, e.g., Primos, Inc. v. Hunter’s Specialties, Inc.*, 451 F.3d 841, 847-48 (Fed. Cir. 2006); *Kinik Co. v. Int’l Trade Comm’n*, 362 F.3d 1359, 1365 (Fed. Cir. 2004). Prior art cited to the examiner during prosecution is considered part of the prosecution history. *See Phillips*, 415 F.3d at 1317.

“A fundamental rule of claim construction is that terms . . . are construed with the meaning with which they are presented in the patent document. Thus claims must be construed so as to be consistent with the specification . . . .” *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1370 (Fed. Cir. 2003) (citations omitted). Therefore, the patent specification has been called the most important guide to claim construction. *See, e.g., Phillips*, 415 F.3d at 1315-16 (“The best source for understanding a technical term is the specification from which it arose, informed, as needed, by the prosecution history.” (quoting *Multiform Desiccants*, 133 F.3d at

1478)); *Vitrionics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (“[The specification] is always highly relevant to the claim construction analysis. Usually, it is dispositive.”).

The specification may show that a patentee has provided its own definitions for claim terms or has narrowed the scope of the claims through disclaimer. *See Phillips*, 415 F.3d at 1316. In such cases, the claim is construed according to the patentee’s expressed intent even if the resulting construction departs from the ordinary meaning of the claim language. *See, e.g., id.*; *Honeywell Int’l, Inc. v. Universal Avionics Sys. Corp.*, 493 F.3d 1358, 1361 (Fed. Cir. 2007) (“When a patentee defines a claim term, the patentee’s definition governs, even if it is contrary to the conventional meaning of the term.”). A patentee may redefine a term either explicitly or implicitly. *See, e.g., Invitrogen Corp. v. Biocrest Mfg., L.P.*, 327 F.3d 1364, 1367 (Fed. Cir. 2003) (“The applicant may also act as his own lexicographer and use the specification to implicitly or explicitly supply new meanings for terms”); *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) (“[T]he specification may define claim terms ‘by implication’ such that the meaning may be ‘found in or ascertained by a reading of the patent documents.’”).

Though claims should be interpreted in light of the specification, it generally is inappropriate to import limitations from the specification into the claims. *See, e.g., N. Am. Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d 1335, 1348 (Fed. Cir. 2005); *Prima Tek II, L.L.C. v. Polypap, S.A.R.L.*, 412 F.3d 1284, 1289 (Fed. Cir. 2005); *see also SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001) (describing the reading of a limitation from the written description into the claims as “one of the cardinal sins of patent law”). For example, the scope of a claim is usually not limited to the particular embodiment or embodiments described in the specification. *See, e.g., Resonate Inc. v. Alteon*



*Websystems, Inc.*, 338 F.3d 1360, 1364-65 (Fed. Cir. 2003) (“[A] particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.”) In order to determine whether the limitations of an embodiment should be applied to a claim, a court must determine whether a person of skill in the art would consider the embodiments to be merely exemplary, or whether they are intended to define the scope of the claim. *See Pfizer, Inc. v. Ranbaxy Labs. Ltd.*, 457 F.3d 1284, 1290 (Fed. Cir. 2006) (“[I]mport[ing] limitations from the specification into the claims . . . should be avoided unless the patentee clearly ‘intends for the claims and the embodiments in the specification to be strictly coextensive.’” (quoting *Phillips*, 415 F.3d at 1323)); *Phillips*, 415 F.3d at 1323.

The prosecution history, also part of the intrinsic evidence, may “inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317. However, the prosecution history “often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.*

“Extrinsic evidence is that evidence which is external to the patent and file history, such as expert testimony, inventor testimony, dictionaries, and technical treatises and articles.” *Vitrionics*, 90 F.3d at 1584. While a district court may consult extrinsic evidence as part of the claim construction analysis, such evidence is considered less reliable than the intrinsic evidence. *See, e.g., Phillips*, 415 F.3d at 1317-19 (“[T]he court should keep in mind the flaws inherent in each type of [extrinsic] evidence and assess that evidence accordingly.”).

These guidelines are not exhaustive. As the Federal Circuit has noted, “there is no magic formula or catechism for conducting claim construction,” and a court is not “barred from

considering any particular sources or required to analyze sources in any specific sequence, as long as those sources are not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.” *Phillips*, 415 F.3d at 1324. “[W]hat matters is for the court to attach the appropriate weight . . . to those sources in light of the statutes and policies that inform patent law.” *Id.*

## **II. Disputed Phrases in the ‘246 Patent**

Although Nobel and Small dispute the construction of seven phrases in the ‘246 Patent, their dispute stems primarily from four words: “flange,” “proximal surface,” and “length.”

“Flange” appears in two phrases in claim 11, “a radially extending flange on said body,” and “terminating within the thickness of said flange,” as well as two phrases in claim 22: “a flange extending from the body” and “terminating within the thickness of the flange.”

“Proximal surface” appears in two disputed phrases, “a plurality of slots penetrating both the proximal surface and the transverse face of the implant,” and “proximal surface,” both of which appear in claim 22.

“Length” appears in one disputed phrase, “said at least one slot has a radially oriented length” in claim 12.

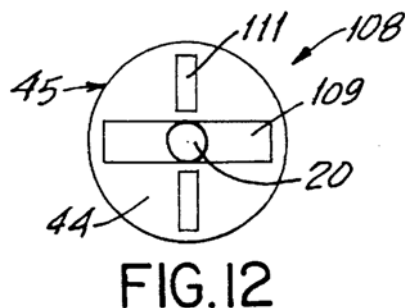
### **A. “A Radially Extending Flange on Said Body” (Claim 11), “A Flange Extending From the Body” (Claim 22), and “Terminating Within the Thickness of the Flange” (Claims 11, 22)**

Small construes “flange” as “the upper portion of the body of the implant which lies underneath the boss and extends radially from the longitudinal axis and forming a protruding collar or rim.” (Pl.’s ‘246 Opening Br. at 8.) Nobel argues that “flange” refers to “a rim or collar projecting radially outwards from the implant body.” (Nobel’s ‘246 Opening Br. at 8.)

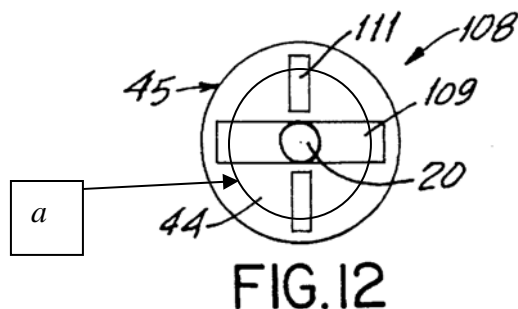
The difference between the two constructions of the phrase are easily demonstrated visually; the highlighted yellow portion below represents the part of the implant to which each party's construction of "flange" refers.

Small's Construction	Nobel's Construction	Original Figure 10b
<p>FIG. 10b</p>	<p>FIG. 10b</p>	<p>FIG. 10b</p>

The Court agrees with Small. The intrinsic evidence does not support Nobel's construction. In particular, Nobel's construction of "flange" is inconsistent with the patent's treatment of "flange" and "proximal surface." Claim 11 recites "an elongated body having a longitudinal axis and a proximal surface generally transverse to said longitudinal axis, said proximal surface is a portion of a radially extending flange on said body." ('246 Patent Ex Parte Reexamination Certificate col.2 ll.1-4.) And all parties agree that the proximal surface covers at least the upper surface of the implant not covered by the boss.



In the figure above, for example, all would agree that the proximal surface covers at least the uppermost part of the implant that is not covered by the rectangular boss (109).

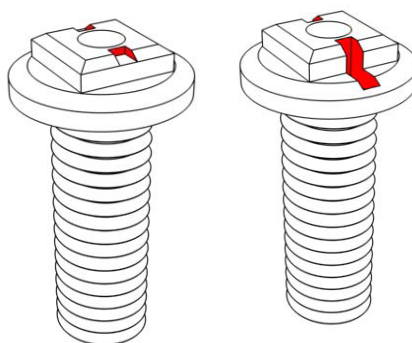


Nobel's definition of "flange" covers only a rim extending radially outwards from the implant body. If the inner circle *a* represents the circumference of the implant body, then Nobel's definition of "flange" covers only the space between *a* and the outermost circle. But the proximal surface undisputedly extends to areas inside the circle *a*, making it difficult to reconcile Nobel's definition of "flange" with claim 11's statement that the proximal surface "*is a portion of a radially extending flange.*" ('246 Patent Ex Parte Reexamination Certificate col.2 l.3 (emphasis added).) The proximal surface in the example above is more than a portion of Nobel's definition of "flange." It extends further toward the center of the implant than Nobel's definition of "flange," meaning that the proximal surface would be a portion of the flange plus a portion of the top surface of the implant not occupied by the boss. That, however, is not how claim 11 characterizes the proximal surface. Claim 11 instead states that the proximal surface "*is*" a portion of the flange, and Nobel's definition of "flange" therefore conflicts with the intrinsic evidence.

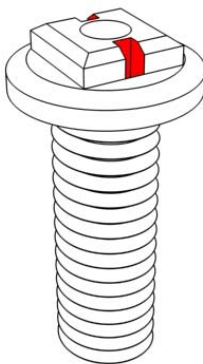
In addition, claim 11 recites "at least one slot penetrating at least one of said proximal surface and said transverse face of said implant and terminating within the thickness of said flange." ('246 Patent Ex Parte Reexamination Certificate col.2 ll.4-11.) Nobel's construction of "flange" would render some of this claim language meaningless, and "claims are interpreted with an eye toward giving effect to all terms in the claim." *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006). Specifically, an implant having a slot that penetrated only the

transverse face of the implant (which all parties agree refers to the upper surface of the boss) and terminating “within the thickness of the flange” still falls within the claim’s language. But such an implant would be impossible under Nobel’s construction of the phrase, rendering the “at least one of” language surplusage. Under Nobel’s construction, the slot would have to penetrate the implant at some point between *a* and the outer rim of the flange in order to terminate within the thickness of the flange. That construction is plainly at odds with the language of claim 11, which requires only that the slot penetrate at least one of the transverse face of the boss and the proximal surface, and does not require that it penetrate the implant at some point between *a* and the outer rim of the flange.

With respect to the construction of “within the thickness of the flange,” Nobel makes two arguments. First, Nobel argues that an implant design in which a slot “extends through the boss and deeper into the implant, but does not extend outwardly into the flange . . . is nowhere disclosed in the ‘246 patent.” (Nobel’s ‘246 Responsive Br. at 9.) According to Nobel, the specification discloses the two designs below, where the red highlighted section represents the slot:



But Nobel contends that the implant design pictured below is not disclosed by the specification:



Even taking that as true,<sup>3</sup> “the claims, not the specification, provide the measure of the patentee’s right to exclude.” *Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1052 (Fed. Cir. 2002). And although courts “must read the claims ‘in view of the specification, of which they are a part,’” *Am. Calcar v. Am. Honda Motor Co.*, --- F.3d ----, 2011 WL 2519503, at \*12 (Fed. Cir. June 27, 2011) (quoting *Phillips*, 415 F.3d at 1312-15), “[c]onstruing the claims in light of the specification does not . . . imply that limitations discussed in the specification may be read into the claims.” *Intervet Inc. v. Merial Ltd.*, 617 F.3d 1282, 1287 (Fed. Cir. 2010).

Thus even if the third implant does not represent one of the preferred embodiments in the specification, “[t]he patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims.” *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009). In light of the claim language including a slot that penetrates only the transverse face of the boss and yet terminates within the thickness of the flange, it seems improper to limit the scope of the claim based on the failure to disclose the third implant design in the specification.

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<sup>3</sup> Small argues in her reply brief that this third implant is disclosed by Figure 10b in the ‘246 Patent because “[t]he broken lines of the alternatively described slot 94’ in Figure 10b . . . shows that the depth is being extended downwardly, not outwardly into the projecting portion of the implant body or what Nobel defines as the ‘flange.’” (Pl.’s ‘246 Reply at 11.) But this interpretation of Figure 10b appears unwarranted, as the specification makes clear that Figures 10a and 10b are to be considered as different drawings of the same implant. (See ‘246 Patent at col.9 ll.56-57 (“The implant 98 of FIGS. 10a, b, is similar to the implant 90 of FIG. 9 . . .”).) And Figure 10a clearly illustrates a slot extending outwardly past the boss. A person of ordinary skill in the art could very well interpret Figures 10a and 10b together to disclose the second of the implant designs that Nobel argues the specification discloses, but not the third.

Second, Nobel argues that “Dr. Small does not and cannot explain why a slot directly below the boss and having a particular depth falling within the hypothetical planes has any benefit or purpose.” (Nobel’s ‘246 Responsive Br. at 11.) According to Nobel, reading the limitation to require termination within the flange itself serves a purpose because “it is undesirable for the slot to pass all the way through the flange and penetrate the bottom surface of the flange.” (*Id.* at 12.) This is because the ‘246 Patent explains, with respect to the horizontal dimension of the slots, that extending radially past the exterior periphery of the flange creates a hazard of bacterial activity. (*See* ‘246 Patent col.9 l.62-col.10 l.1.) But this Court’s task “is not to limit claim language to exclude particular devices because they do not serve a perceived ‘purpose’ of the invention. . . . An invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that invention be limited to encompass all of them.” *Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1345 (Fed. Cir. 2008) (quoting *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed. Cir. 2003)). Nobel’s arguments are therefore unpersuasive.

To support its definition of “flange,” Nobel points to this portion of the specification:

The boss 92 is beveled (similar to FIG. 10b) at its upper edges 93. Also, the boss 92 may rise vertically from the general plane of the surface 44 or there may be a slight taper in the direction *away from the flange* 45.

(‘246 Patent col. 9 ll. 25-28 (emphasis added).) Nobel argues that if the flange extended underneath the boss, a taper “away from the flange” would be nonsensical; the flange must be at the outer edge of the implant for the boss to taper away from it. But as Small argued at the *Markman* hearing, the taper could simply refer to the boss’s being narrower at its top than at its bottom. That is, the “direction away from the flange” might not refer to the radial direction away from the flange, but the axial direction away from the flange. Such an understanding is

consistent with the meaning of taper as a “[g]radual diminution in width or thickness in an elongated object; continuous decrease in one direction.” 17 *Oxford English Dictionary* 627 (2d ed. 1991). Small’s understanding of the language simply construes it to mean that the width of the boss decreases in the axial direction away from the boss.

Nobel also advances a number of general-purpose and technical dictionaries that agree with its definition of “flange.” See, e.g., *The American Heritage College Dictionary* 517 (3d ed. 1997) (“A protruding rim, edge, rib or collar, as on a pipe shaft, used to strengthen an object, hold it in place, or attach it to another object.”); *Heinemann Dental Dictionary* 104 (4th ed. 1997) (“An external or internal rim, either for strength or as an attachment or guide for some other part.”); *The Journal of Prosthetic Dentistry*, Vol. 71, No. 1 (January 1994), at 73 (“[A] rib or rim used for strength, for guiding, or attachment of another object.”); *Van Nostrand’s Scientific Encyclopedia* 1260 (8th ed. 1995) (“A rim or projection extending completely around the object which is flanged.”); *Webster’s New World Dictionary, Third College Edition* 513 (1988) (defining “flange” as “a projecting rim or collar on a wheel, pipe, rail, etc. to hold it in place, give it strength, guide it, or attach it to something else”). In addition, Nobel points out other court decisions construing the term in accordance with its definition. See, e.g., *Waner v. Ford Motor Co.*, 331 F.3d 851, 854 (Fed. Cir. 2003) (defining “flange” as “a raised or projecting edge, rib, or rim for strength, as in a T-rail; for guidance, as on a rail to keep wheels in place; for connection with some other object, as in some pipes” (citing *Webster’s New Twentieth Century Dictionary, Unabridged* 696 (2d ed. 1962))); *Great Dane Ltd. P’ship v. Stoughton Trailers, LLC*, No. 3:08-CV-89 (CDL), 2009 WL 5200085, at \*7 (M.D. Ga. Dec. 23, 2009) (defining “flange” as “a projecting rib or rim for attachment to another object”). But the Federal Circuit has explained that “extrinsic evidence . . . is ‘less significant than the intrinsic record in determining



the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)). And the Federal Circuit has also cautioned that “heavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context.” *Id.* at 1321. Where the intrinsic evidence clearly weighs in favor of Small’s definition of “flange,” the Court is reluctant to depart from that definition based solely on extrinsic evidence.

The Court therefore construes these phrases in accordance with Small’s definition.<sup>4</sup>

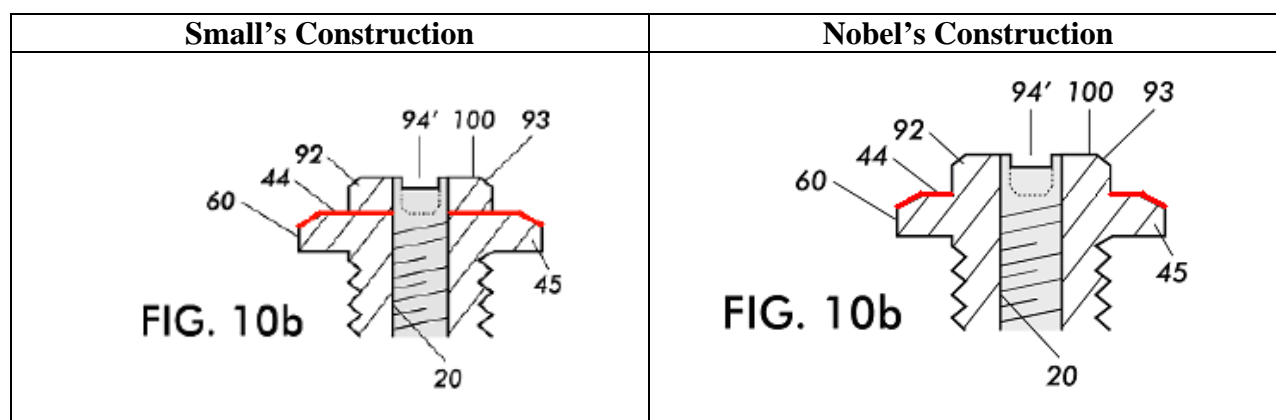
**B. “Proximal Surface” and “A Plurality of Slots Penetrating Both The Proximal Surface And The Transverse Face Of The Implant” (Claim 22)**

The construction of both of these phrases depends on the meaning of “proximal surface,” as the parties agree that the “transverse face of the implant” is “the exterior surface extending across the top of the boss.” (Nobel ‘246 Reply at 10; Small ‘246 Responsive Br. at 21.) Small construes “proximal surface” as “an upper surface of the implant body, including the area underneath the boss” and “a plurality of slots penetrating both the proximal surface and the transverse face of the implant” as “at least two slots that penetrate both the proximal surface and the transverse face.” (Pl.’s ‘246 Opening Br. at 12.) Nobel construes the former phrase to mean “the portion of the outer boundary of the implant that extends across the top of the implant body” and the latter phrase to mean “two or more slots piercing both the exterior surface extending across the top of the implant body and the exterior surface extending across the top of the boss.” (Nobel’s ‘246 Opening Br. at 22, 23.) Here, the Court agrees with Nobel.

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<sup>4</sup> The phrase “circular flange” has also been identified for construction in the ‘945 Patent, and the Court adopts the same construction for that phrase.

The difference between the parties' construction of the phrase is illustrated below, where the red line is the area constituting each party's construction of "proximal surface":



The intrinsic evidence favors Nobel's interpretation. The specification uses the word "surface" numerous times, and its usage of the word accords with Nobel's construction of "surface," namely an exterior surface constituting part of the visible outer boundary of an object. (See, e.g., '246 Patent, col.3 ll. 11-13 ("Guided by the jig, a burr forms radial slots, or other indentations, in the outer surface of the implant adjacent to the protrusion."); *id.* col.5 ll.60-64 ("First, the proximal end of the implant 12 is exposed by removal of the crown 22 and an abutment, if one was used intermediate the implant and the crown. As a result, the protrusion or boss 42 and the surface 44 on the implant are exposed to view (FIG. 3)."); *id.* col.6, ll.1-2 ("The notching jig 64 includes a bottom interface surface 66 that rests on the exposed flange surface 44 of the implant 12.").)

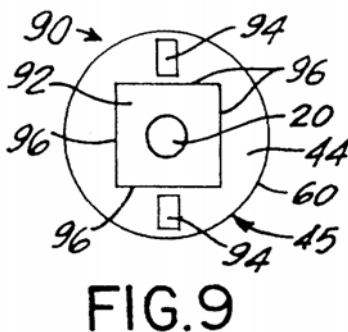
In addition, Small's construction of "proximal surface" would render the same claim language meaningless as would Nobel's construction of "flange." Claim 11 recites "at least one slot penetrating at least one of said proximal surface and said transverse face of said implant and terminating within the thickness of said flange." ('246 Patent Ex Parte Reexamination Certificate col.2 ll.10-12.) Under Small's construction of "proximal surface," the limitation

“penetrating at least one of said proximal surface and said transverse face” reduces to “penetrating the proximal surface,” reading out the “transverse face” part of the claim. Because Small’s construction of “proximal surface” includes the imaginary surface at the top of the flange underneath the boss, any slot that penetrates the transverse face of the implant and terminates within the thickness of the flange necessarily penetrates Small’s definition of the proximal surface as well. Under that construction, the “transverse face” limitation does no work. Only by construing “proximal surface” not to include the area underneath the boss does this limitation have meaning.

Small points to two pieces of intrinsic evidence in support of her position. First, Small argues that because the claims state that the boss “extend[s] from said proximal surface,” (‘246 Patent col.14, l.13.), the proximal surface must lie underneath the boss. Although that language certainly accords with Small’s construction, it may also “simply describe[] the fact that the periphery of the boss intersects the proximal surface of the implant, and the boss extends higher than that proximal surface.” (Nobel’s ‘246 Responsive Br. at 17.) Small also points to this passage from the specification:

In an implant 90 of FIG. 9, a generally square boss 92 is elevated above the surface 44 of a flange 45 on the implant 90. As in the earlier embodiments, a tapped hole 20 is at the center of the surface 44 . . . .

(‘246 Patent, col. 9, ll. 4-7.) Figure 9 from the ‘246 Patent is shown below:



Because the hole is “at the center of the surface,” Small argues that the proximal surface must extend underneath the boss until it reaches the hole. But an argument that the patent drafter chose to place the hole at the center of the “surface” rather than at the center of the “implant” or the “boss” hardly does the work of “clearly express[ing]” the “intent” of the patentee to deviate from the ordinary meaning of “surface” and “act as its own lexicographer . . . in the written description.” *Helmsderfer v. Bobrick Washroom Equipment, Inc.*, 527 F.3d 1379, 1381 (Fed. Cir. 2008). It strains the ordinary meaning of “surface” to consider the “proximal surface” of the implant to include an unseen area, especially in light of that construction’s effect in rendering language in claim 11 superfluous.

The extrinsic evidence also weighs heavily in Nobel’s favor. General-purpose and specialized dictionaries both define “surface” consistent with Nobel’s definition. *See, e.g., Melloni’s Illustrated Medical Dictionary* 458 (3d ed. 1993) (defining “surface” as “[t]he outer boundary of an object” and “proximal surface” as “[a] surface that is nearer to a point of reference” or “[t]he surface of a tooth that faces an adjoining tooth in the same dental arch”); G.H.F. Naylor, *Dictionary of Mechanical Engineering* 382 (4th ed. 1996) (defining “surface” as “[t]he boundary of an object separating it from another substance such as the surrounding air”); 17 *The Oxford English Dictionary* 286 (2d ed. 1991) (“The outermost boundary (or one of the boundaries) of any material body, immediately adjacent to the air or empty space, or to another body.”); *Webster’s Third New International Dictionary* 2300 (1993) (“defining “surface” as “the exterior or outside of an object or body; the outermost or uppermost boundary; one or more of the faces of a three-dimensional thing”). It is true that some dictionaries contain an abstract mathematical definition of “surface” that could support Small’s construction. *See, e.g., Merriam-Webster’s Collegiate Dictionary* 1186 (10th ed. 1996) (giving the second definition of

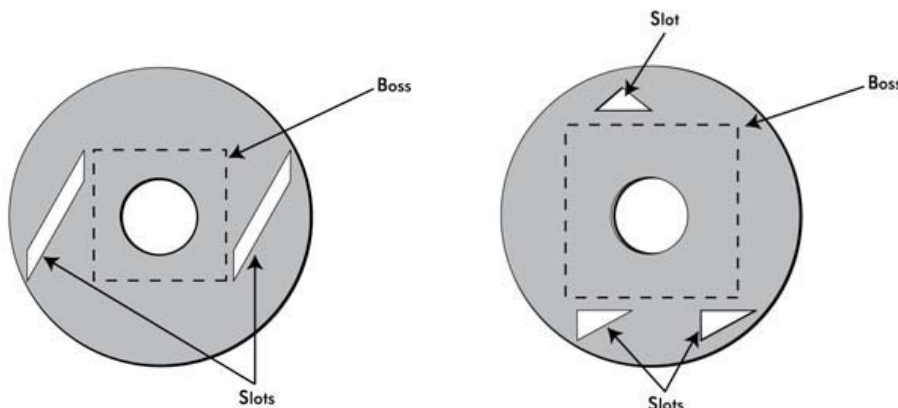
“surface” as “a plane or curved two-dimensional locus of points (as the boundary of a three-dimensional region) <plane ~> <~ of a sphere>”); *Webster’s New World College Dictionary* 1347 (3d ed. 1997) (giving a geometric definition of “surface” as “an extent or magnitude having length and breadth, but no thickness”). But here, where the uses of “surface” in the specification overwhelmingly refer to a physical outer boundary rather than a theoretical mathematical construct, interpreting “proximal surface” in the manner advocated by Nobel is appropriate and in accordance with how a person having ordinary skill in the art would understand it. *See, e.g., Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 996 (Fed. Cir. 2006) (“[T]he court must ensure that any reliance on dictionaries accords with the intrinsic evidence: the claims themselves, the specification, and the prosecution history . . . . [I]n those circumstances where reference to dictionaries is appropriate, the [court’s] task is to scrutinize the intrinsic evidence in order to determine the most appropriate definition.” (quoting *Free Motion Fitness, Inc. v. Cybex Int’l, Inc.*, 423 F.3d 1343, 1348-49 (Fed. Cir. 2005))). Accordingly, the Court adopts Nobel’s construction of “proximal surface” in these phrases.

### C. “Said At Least One Slot Has A Radially Oriented Length” (Claim 12)

Small contends that this phrase should be construed to mean “one or more slots having a dimension that extends radially from the longitudinal axis.” (Pl.’s ‘246 Opening Br. at 10.) Nobel argues that the phrase should be construed to mean “the longer dimension of the slot (viewed from above) extends in the radial direction.” (Nobel’s ‘246 Opening Br. at 24.) General-purpose dictionaries lend some support to both definitions. *See, e.g., Merriam-Webster’s Collegiate Dictionary* 666 (10th ed. 1996) (defining length as both “the longer or longest dimension of an object” and “a measured distance or dimension”); *Webster’s New World Dictionary, Third College Edition* 773 (3d ed. 1988) (defining “length” both as “the measure of

how long a thing is; measurement of anything from end to end” and as “the greatest of the two or three dimensions of anything”).

Nobel contends that Small’s construction of the phrase renders it superfluous, an argument that arises from divergent understandings of what Small’s construction means. Small argues that her construction “requires that one of the geometric dimensions of a slot (e.g., the sides of a rectangle) extends radially from the longitudinal axis.” (Pl.’s ‘246 Reply at 12.) Nobel, however, regards such an understanding of the phrase as “fuzzy math at best” and argues that “[n]o matter what shape a slot has, its dimension in the radial direction can be determined by laying a ruler across the slot in the radial direction.”<sup>5</sup> (Nobel’s ‘246 Reply at 10.) The difference between the two understandings can be illustrated visually:



In the above two pictures, which represent a cross section of implant as viewed from above, Small argues that even under her construction, the slots do not have a radially oriented length because none of their edges align with a line extending radially from the longitudinal axis (here, the center of the picture); therefore no “dimension,” such as length or width, is defined in a radial

<sup>5</sup> This divergent understanding, in turn, appears to arise from different definitions that can be applied to “dimension.” A “dimension” is both “[m]easurable or spatial extent of any kind, as length, breadth, thickness, area, volume; measurement, measure, magnitude, size,” and “[a] mode of linear measurement, magnitude, or extension, in a particular direction; usually as co-existing with similar measurements or extensions in other directions.” 4 *Oxford English Dictionary* 671 (2d ed. 1991) (emphasis added). The irony of “construing” one ambiguous term with a term that causes equal confusion among the parties is not lost on the Court.

direction. Nobel's understanding of Small's construction is that the slots in the pictures above would have radially oriented length because distance exists between the two points at which a line extending radially from the longitudinal axis would intersect with the slots.

Regardless, the Court accepts Nobel's construction of "length," which is supported by the intrinsic evidence. In the section of the specification summarizing the invention, all references to "slots" are to "radial slots," indicating that the longest dimension of the slot is in the radial direction. (*See* '246 Patent col.3 ll.11-14 ("Guided by the jig, a burr forms radial slots, or other indentations, in the outer surface of the implant adjacent to the protrusion. The slots may extend into the implant protrusion."); *id.* col.3 ll.17-21 ("The bottom surface of the prosthetic device that engages the implant precisely engages the newly-added radial slots on the implant such that when the final screw is tightened into place, rotation between the implant and the attachments is prevented."); *id.* col.3 ll.25-28 ("Further, an improved implant in accordance with the invention has a proximal protrusion that is generally square in cross section and further includes radial slots for use in threading the implant into the jaw bone."); *id.* col.3 ll.41-44 ("In accordance with the invention, radial slots may be formed into the protrusion itself or extend radially from the base of the protrusion. Slots may be provided in different radial directions.").)

It is true that the specification does, on occasion, use "length" to refer to a distance measurement rather than the longest dimension of a figure, (*see, e.g., id.* col. 10 ll.10-15 ("In FIG. 11 another embodiment of an implant 106 in accordance with the invention is shown having a generally square elevated boss 92 with slots 94' running diagonally across the square and extending proximate to the central opening 20. This provides a longer slot length in the boss itself, but is otherwise similar to the implant 98.")), but those pieces of intrinsic evidence support Nobel's understanding of Small's construction, *i.e.*, that a slot has a measurable length in the

radial direction. The specification does not use “length” in the specific manner that Small advocates, *i.e.*, to refer to a particular dimension, such as length or width, of a slot. And adopting a construction merely requiring a slot to have some measurable radial length would render the limitation superfluous, but “[c]laims must be ‘interpreted with an eye toward giving effect to all terms in the claim.’” *Becton, Dickinson and Co. v. Tyco Healthcare Group, LP*, 616 F.3d 1249, 1257 (Fed. Cir. 2010) (quoting *Bicon*, 441 F.3d at 950). Accordingly, the Court adopts Nobel’s construction of this phrase.

### **III. The ‘945 Patent**

Small, Nobel, Implant Direct, and Camlog have identified a number of terms and phrases (some of which appear in multiple claims) for construction, although not all defendants dispute the construction of all phrases.

#### **A. “Proximal Surface” (Claims 1, 9, and 14)**

Small construes this phrase as “an upper surface of the implant body that is generally perpendicular to the longitudinal axis and including in the case of a protruding boss, the area underneath the boss.” (Pl.’s ‘945 Opening Br. at 7.) Nobel construes the phrase as “the exterior surface that extends across the top end of the implant body.” (Nobel’s ‘945 Responsive Br. at 2.) Camlog adopts Nobel’s construction. (Camlog Opening Br. at 10.) Implant Direct disputes Small’s construction only insofar as it implies that a boss can be non-protruding. (Implant Direct Opening Br. at 13.)

The arguments raised by Small and Nobel are substantially similar to the ones they raised in contesting the same phrase in the ‘246 Patent, and the Court accepts Nobel’s construction here for the same reasons. (*Compare* Pl.’s ‘246 Responsive Br. at 17-20 *and* Nobel’s ‘246 Responsive Br. at 16-18 *with* Pl.’s ‘945 Responsive Br. at 5-9 *and* Nobel’s ‘945 Responsive Br.



at 2-4.) Small argues again that because the tapped hole is at the “center” of the surface, the surface must extend underneath the boss, but the Court has already found this argument unpersuasive with respect to the ‘246 Patent, and finds it unpersuasive here as well. The ‘945 Patent does not differ materially from the ‘246 Patent in its treatment of the term “surface,” and nothing in the ‘945 Patent, as compared to the ‘246 Patent, provides additional reason to think that a “surface” was meant to extend underneath a protruding boss.

**B. “Generally Transverse To Said Longitudinal Axis” (Claims 1, 9, and 14)**

Small contends that the limitation that the proximal surface be “generally transverse” means that the proximal surface must be “generally perpendicular to the longitudinal axis.” (Pl.’s ‘945 Opening Br. at 8.) Nobel, however, argues that this limitation simply means that the proximal surface “extends *across* the top end of the implant body.” (Nobel’s ‘945 Opening Br. at 11 (emphasis in original).) The Court agrees with Nobel.

Both parties contend that they use the “ordinary meaning” of the phrase, pointing to different dictionary definitions. Nobel cites a dictionary defining “transverse” as “lying or extending across or in a cross direction; cross.” *Random House Unabridged Dictionary* 2013 (2d ed. 1993). Small points to another dictionary defining the term as “made at right angles to the anterior-posterior axis of the body <a ~ section>.” *Merriam-Webster’s Collegiate Dictionary* 1256 (10th ed. 1996). Nobel rejoins that the first definition in *Merriam-Webster’s*, “acting, lying, or being across : set crosswise,” accords with its construction. *Id.*

The word “transverse” is not used anywhere in the specification of the ‘945 Patent. It is used repeatedly in the claims to describe “a proximal surface generally transverse to said longitudinal axis,” the phrase at issue here, and the “transverse face” of the boss. (*See, e.g.*, ‘945 Patent col.14, ll.10, 12, 48-49; *id.* col. 15, ll.4, 6.) Neither provide much guidance as to which

construction is correct. The patent does, however, use “perpendicular” and “perpendicularly” in its descriptions of the boss and the slots, suggesting that the patent drafter knew how to describe a “generally perpendicular” interface if desired. (*See id.* col.10 ll.28-31 (“[I]t is possible in manufacture to enlarge the size of the generally square shape and possible [sic] lose the perpendicular intersections as indicated by the broken lines 104 in FIG. 10a.”); *id.* col.10 ll.41-44 (“Another alternative embodiment (FIG. 12) provides an implant 108 with an elongated rectangular boss 109 with perpendicularly oriented slots 111 that extend proximate to the central opening 20.”).) The patent also claims an embodiment in which slots have flat sides that intersect in “substantially right angles,” another term that more specifically delineates perpendicularity than “transverse” that the patentee could have used. (*Id.* col.16, ll.37-38.) To the extent that the intrinsic evidence is probative in this case, then, it weighs in Nobel’s favor.

The Federal Circuit’s reasoning in *Acumed LLC v. Stryker Corp.*, 483 F.3d 800 (Fed. Cir. 2007), provides an additional persuasive basis to adopt Nobel’s construction. There, the Federal Circuit interpreted the phrase “transverse holes.” The court noted that “[t]he plain meaning of Claim 1 covered more than” perpendicular holes, explaining that “while the disclosed embodiment possesses ‘perpendicular’ holes, the claim language covers all ‘transverse’ holes—a word that does not necessarily imply right angles.” 483 F.3d at 807. The court further explained that the intrinsic evidence favored a construction of “transverse” that was broader than “perpendicular” because the written description stated that a figure “illustrates a plurality of transverse holes, each of which is . . . perpendicular to the portion of the nail axis at the butt portion 14 of the nail,” suggesting that “the patentee considered ‘transverse’ and ‘perpendicular’ to have distinctly different meanings.” *Id.* Though the patentee “could have used the word ‘perpendicular’ . . . they chose a different term that implies a broader scope,” transverse. *Id.*

Furthermore, there was “very little indication that the patentees considered perpendicularity important to their invention.” *Id.* Thus, the court “decline[d] to impose a construction *narrower* than the term’s ordinary meaning,” and held that “transverse” meant “across” rather than “perpendicular to.” *Id.* at 809.

Admittedly, Nobel’s evidence in this case is a bit weaker than that in *Acumed*. As Small points out, in that case, there was intrinsic evidence in the juxtaposition of “transverse” and “perpendicular” in the same sentence that implied that the two terms had different meanings. And the Court is mindful that “[a] particular term used in one patent need not have the same meaning when used in an entirely separate patent, particularly one involving different technology.” *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1318 (Fed. Cir. 2005). But here, as in *Acumed*, there is no indication anywhere in the patent that perpendicularity is of any importance to the proximal surface. Here, the patentee also demonstrated an ability to use the terms “perpendicular” and “right angles” when desired. And nothing in the specification or claims implies a specialized definition for “transverse.” Accordingly, the Court adopts Nobel’s construction of the term.

### **C. “A Boss Extending From Said Proximal Surface” (Claims 1 and 9)**

The parties’ dispute with respect to the construction of this phrase relates to the meaning of the word “boss.” Small construes the term to mean “a protrusion rising from the proximal surface or a recess extending through the proximal surface into the body of the implant.” (Pl.’s ‘945 Opening Br. at 9.) Under Small’s construction, a boss is either a protrusion or a recess. Nobel and Implant Direct both construe the term to mean “a protrusion extending upward from the proximal surface.” (Nobel’s ‘945 Opening Br. at 7-8; Implant Direct Opening Br. at 14.) Under Nobel and Implant Direct’s construction, a boss is a protrusion only.

The latter construction accords with the intrinsic evidence. The specification consistently uses the word “boss” to indicate a protrusion, not a recess. For example, it states that “the boss 92 may rise vertically from the general plane of the surface 44 or there may be a slight taper in the direction away from the flange 45.” (‘945 Patent col.9 ll.50-52.) The patent also describes an artificial tooth that “may have a recess (not shown) on its bottom of rectangular shape that receives both bosses 119 in a single cavity.” (*Id.* col.10 ll.58-59.) It is, of course, impossible for a recess to “receive” another recess; Small’s construction would make this passage nonsensical. Other examples in the ‘945 Patent illustrating its treatment of “boss” as a protrusion abound. (*See, e.g., id.* col.9, ll.26-29 (“[A] boss 92 having a cross section that is a rectangle . . . is elevated above the surface 44 of a flange 45 on the implant 90.”); *id.* col.9, l.53 (“Such a construction makes for easier entry of the boss 92 into a recess . . . .”); *id.* col.10, l.33-35 (“In FIG. 11 another embodiment of an implant 106 in accordance with the invention is shown having a generally square elevated boss . . . .”); *id.* col.10 ll.61-63 (“Alternatively, the bottom surface of the crown may have two smaller rectangular recesses with each of the bosses 119 being received in a respective recess.”); *id.* col.11 ll.56-57 (“FIG. 17 illustrates a star-shaped polygonal boss 125 extending above the surface 44.”); *id.* col.11 ll.61-62 (“FIG. 18 illustrates a multi-sided polygonal boss 127 rising from the surface 44 in the form of a trefoil.”).)

Nevertheless, Small argues that her construction of “boss” is correct because of the following passage in the patent:

It should also be understood that a reversal of features is intended to fall within the inventions [sic] scope. Thus any boss cross-section which has been described as protruding from the flange surface 44 may also be formed (and viewed in the Figures) as a recess in the surface 44. In such a construction the mating crown or abutment is fabricated with a correspondingly shaped protrusion (or protrusions) that seat(s) in the recess (or recesses).

(*Id.* col.13 ll.58-65.) According to Small, this passage implies that “bosses may be formed as protruding as shown in the drawings or a recess extending into the surface.” (Small ‘945 Responsive Br. at 14.) But this misreads this passage. As a matter of simple grammar, it does not say that any boss may be formed as a recess. It says that any *cross-section* of a boss may be formed as a recess; “cross-section,” not “boss,” is the subject of the sentence. In context, where the previous two pages of the patent detail the different cross-sectional shapes the boss can take, the above-quoted passage is best understood as conveying that the invention, if it has a recess instead of a boss, can use the same cross-sectional shapes in its recess that the specification teaches for use with the boss. There is little to indicate that the passage intends to equate the terms “boss” and “recess,” especially given the earlier references to recesses that “receive” bosses. Notably, the first sentence after the supposed equating of “boss” and “recess” continues to use “recess” to refer to the latter concept, and at no point does the patent use “boss” to refer unambiguously to a recess.

Because the intrinsic evidence is clear, there is no need to resort to extrinsic evidence. But even if there were such a need, the extrinsic evidence clearly favors of an interpretation of “boss” as “protrusion.” *See, e.g.,* G.H.F. Nayler, *Dictionary of Mechanical Engineering* 42 (4th ed. 1996) (defining “boss” as “[a]ny protuberant part”); *Random House Unabridged Dictionary* 244 (2d ed. 1993) (“an ornamental protuberance of metal, ivory, etc.; stud.”); *Webster’s New World Dictionary, Third College Edition* 163 (3d ed. 1993) (defining “boss” as “a raised part or protruding ornament on a flat surface; a decorative knob, stud, etc.”). Small does not adduce any extrinsic evidence in support of her position.

Accordingly, the Court construes these terms in accordance with Nobel’s construction.

**D. “At Least One Indentation Penetrating Said Proximal Surface Of Said Body and Said Transverse Face of Said Boss” (Claim 1)**

The construction of this phrase is a corollary to the construction of “proximal surface.” The parties agree that “transverse face” means the “exterior surface extending across the top of the boss.” The only remaining disputed term is “indentation,” which Small seeks to construe as “groove or notch” whereas Nobel maintains that the term is clear on its face and requires no construction. Neither party identifies any substantive reason why the choice of words in this case makes any difference.

The Federal Circuit has stated:

The *Markman* decisions do not hold that the trial judge must repeat or restate every claim term in order to comply with the ruling that claim construction is for the court. Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.

*U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). But the Federal Circuit has also advised that “[w]hen the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008). Without Nobel having adduced any substantive argument to controvert Small’s construction of “indentation,” the Court adopts Small’s construction of that term, “one or more grooves or notches piercing both the exterior surface extending across the top of the implant body and the exterior surface extending across the top of the boss.”

**E. “Trefoil” and “Quatrefoil” (Claim 9)**

Small’s definitions for these terms are “a shape having three symmetrical leaflets or lobes” and “a shape having four symmetrical leaflets or lobes,” respectively. (Pl.’s ‘945

Opening Br. at 11-12.) Nobel defines a trefoil as “an ornamental design composed of three lobes or leaves that are divided from one another by cusps and points.” (Nobel’s ‘945 Opening Br. at 20.) It defines quatrefoil in the same way, but with four lobes or leaves. (*Id.*) Implant Direct advocates the same definition as Nobel. (*See* Implant Direct Responsive Br. at 16.) The Court adopts Nobel’s definitions.

The primary point of contention comes from the sole figure in the patent representing a trefoil, shown below:



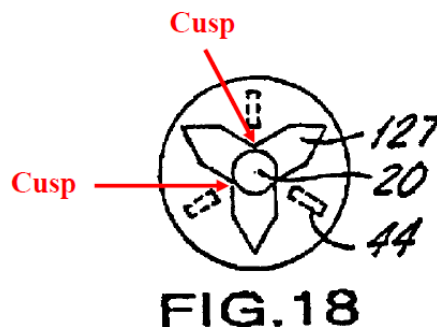
The specification describes this figure as “illustrat[ing] a multi-sided polygonal boss 127 rising from the surface 44 in the form of a trefoil.” (‘945 Patent col.11, ll.61-62.) It does not elaborate on the definition of “trefoil,” and the relevant claim says only that a “non-round cross section” is “selected from the group consisting of” various shapes including “trefoil” and “quatrefoil.” (*See* ‘945 Patent col.15 ll.9-14.)

Small contends that Nobel’s construction excludes the shape represented by Figure 18 and is therefore improper. The Federal Circuit has advised that “[a] claim construction that excludes the preferred embodiment ‘is rarely, if ever, correct and would require highly persuasive evidentiary support.’” *Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010) (quoting *Vitrionics*, 90 F.3d at 1583-84). But it is unclear that Nobel’s construction actually does exclude this shape. The substance of Small’s argument that

the lobes of the trefoil shown above are not separated by cusps is wholly captured by this paragraph in her responsive brief:

Figure 18 does not show “an ornamental design composed of three lobes or leaves that are divided from one another by cusps or points.” Nobel defines “cusps” as “points or pointed ends.” The three leaflets or lobes are not divided by pointed ends or cusps. Nothing in the claim language or specification requires either expressly or by implication that a boss with a trefoil cross-section must be an ornamental design composed of three lobes or leaves divided by cusps or points.

(Small ‘945 Responsive Br. at 18 (internal citations omitted); *see also* Small ‘945 Reply at 10-11 (“Nobel contends that a trefoil must have ‘cusps or points,’ but its self-serving dictionary definition is inconsistent with the specification, which as explained in Dr. Small’s Responsive Brief, depicts a trefoil without cusps.”).) But as Nobel illustrates in its responsive brief, Figure 18 does include “cusps,” as shown below.



(Nobel’s ‘945 Responsive Br. at 12.) Indeed, where Small acknowledges that a “cusp” “refers to the point of intersection of two lines or curves,” (Pl.’s ‘945 Reply at 11 (citing *Webster’s New World College Dictionary* 341 (3d ed. 1997))), it is difficult to see why the red arrows above do not point to cusps. The intrinsic evidence therefore fails to resolve the issue in Small’s favor.

It is also unclear how Small arrived at her definition for “trefoil.” In her opening brief, Small asserts that the “ordinary and common meaning of ‘trefoil’ is ‘clover’ or ‘a trifoliate leaf.’” (Pl.’s ‘945 Opening Br. at 11 (quoting *Merriam-Webster’s Collegiate Dictionary* 1258 (10th ed. 1996))). Small claims that this definition lends itself to interpreting “trefoil” as “a



shape having three symmetrical leaflets or lobes.” But “trifoliolate” itself means “[c]onsisting of three leaflets, or having leaves of this form; trifoliate.” 18 *The Oxford English Dictionary* 524 (2d ed. 1991). By substituting “having” in its definition for “consisting of” in the definition of trifoliolate, Small’s definition goes beyond the scope of a “trifoliolate leaf” to allow “trefoil” to connote any shape that *contains* a trifoliolate leaf. This extends the “ordinary meaning” of “trefoil” too far, and Small cites no authority that supports this broad construction. Nobel’s definition, in contrast, is a relatively straightforward use of a standard dictionary definition for the shape of a trefoil. See *Random House Unabridged Dictionary* 2016 (2d ed. 1993) (defining “trefoil” as “an ornament composed of three lobes, divided by cusps, radiating from a common center”). And as Nobel points out, “[a] clover,” part of Small’s “ordinary meaning” of trefoil, “of course, consists of three (or rarely four) leaves that join together at a common point of origin.” (Nobel’s ‘945 Responsive Br. at 11.) Accordingly, the Court adopts Nobel’s definitions of “trefoil” and “quatrefoil.”

#### **F. “Nonconvex Irregular Polygon” and “Nonregular Polygon” (Claim 9)**

The dispute between Small and Nobel about these terms stems from what it means for a polygon to be “irregular” or “nonregular.” Small defines an “irregular” or “nonregular” polygon to be “a polygon that has sides that are not all equal **and** angles that are not all equal.” (See Pl.’s ‘945 Opening Br. at 12-13 (emphasis in original).) Nobel defines the term as “a polygon that has sides that are not all equal **and/or** angles that are not all equal.” (Nobel’s ‘945 Opening Br. at 21 (emphasis added).)

Small’s definition, however, fails as a simple matter of logic. The specification defines a “regular polygon” as one that is “equiangular and equilateral.” (‘945 Patent col.13, ll.29-30.) It follows logically that a polygon that is not equiangular or equilateral is an “irregular” or

“nonregular” one. Small’s argument in support of her definition is that all of the figures that Small identified as having nonregular polygonal cross sections have both different length sides and different interior angles. But the Federal Circuit has repeatedly warned against “confus[ing] exemplars or preferred embodiments in the specification that serve to teach and enable the invention with limitations that define the outer boundaries of claim scope.” *Intervet Inc.*, 617 F.3d at 1287; *accord Phillips*, 415 F.3d at 1323. Here, the specification clearly defines a “regular polygon.” Simple logic leads to the definition of an “irregular” or “nonregular” polygon, which includes the examples that Small identifies. Accordingly, the Court accepts Nobel’s definition.

**G. “Axially Extending Side Surfaces” (Claim 9) and “A Non-Round Cross Section As Viewed Along Said Axis” (Claim 9)**

Claim 9 of the ‘945 Patent recites a dental implant, comprising:

an elongated body having a longitudinal axis and a proximal surface generally transverse to said longitudinal axis, a boss extending from said proximal surface, said boss having a transverse face, axially extending side surfaces, and a non-round cross section as viewed along said axis,

said non-round cross section being defined by said side surfaces and selected from the group consisting of generally trefoil, quatrefoil, trapezoid, convex polygon with noncongruent sides, tear-shaped convex, and nonrectangular parallelogram cross sections.

(‘945 Patent col.15 ll.5-9, 27-30.) The Court considers the phrases “axially extending side surfaces” and “a non-round cross-section as viewed along said axis” together in this section.

Small’s construction of “a non-round cross section as viewed along said axis” is “the boss has at least one radial cross section which has a non-round shape.” (Pl.’s ‘945 Opening Br. at 15.) Implant Direct interprets the phrase to mean “a constant cross section at every depth of the boss that is not circular.” (Implant Direct Opening Br. at 19.)

Small's construction of "axially extending side surfaces" is "the side surface areas of the boss which extend in the axial direction of the implant body." (Pl.'s '945 Opening Br. at 14.) Implant Direct construes the phrase to mean "all the side surfaces of the boss are substantially parallel to the central axis of the implant and may include a slight taper to permit the boss to mate with a corresponding opening in an abutment or crown." (Implant Direct Opening Br. at 18.) Thus Small and Implant Direct dispute two aspects of the phrase: first, whether the phrase should be construed to require the side surfaces to be "substantially parallel" and second, whether all of the side surfaces are required to be "axially extending."

Understanding the specification's teachings on the nature of the invention aids in interpreting these phrases. The patent is directed toward a problem in titanium dental implants in which "[a]n unacceptable degree of looseness often develops between the implant and the adjacent abutment or crown whereby there is relative rotation between the implant and the attached elements" because "the contours of the protrusion at the proximal end of the implant become worn as a result of lateral forces applied on the protrusion." ('945 Patent col.2 ll.16-22.)

The patent discloses two solutions to this problem. First, it teaches of "radial slots" which prevent "forces . . . [from being] applied directly to the protrusion's external surfaces when inserting the implant for subsequent osseointegration" and consequently protect "the surfaces of the protrusion that are used to maintain the abutment and/or crown against rotation relative to the implant" against "inadvertent damage." (*Id.* col.2 ll.30-38.) Protrusions on the abutment or crown that correspond to the slots also "precisely engage[] the . . . radial slots . . . such that . . . rotation between the implant and the attachments is prevented." (*Id.* col.2 ll.21-25.)

Second, the patent teaches that "the slots may be omitted whereby the implant, if threaded into the jaw bone, is driven by a tool applied to the protrusion." (*Id.* col.2 ll.49-51.)

This is because “[m]any cross sections are available for the protrusion to provide a non-round shape,” and with these protrusions, unlike the hexagonal boss of the prior art, “[f]orces tending to rotate the crown have little effect on the holding power of the proximal protrusion even should the edges of the protrusion be removed or become rounded.” (*Id.* col.2 ll.40-44.) Thus the description of the invention emphasizes the non-round shape of the boss and its benefits in preventing rotation of the crown relative to the implant.

That emphasis on the shape of the boss is reflected in the patent’s description of the preferred embodiments. When describing the square boss, for example, the patent teaches that “a crown with a square recess on its bottom surface is fitted to the implant 90 with a snug fit to the boss 92, and is tightened in place with a screw 34,” and in this implementation, “[t]he parallel opposed sides 96 and included 90° angle of the square boss 92 prevent rotation even if the corners of the square-shape should for some reason become rounded.” (*Id.* col.9 ll.45-48.) The shape of the boss is essential to the central problem the patent seeks to solve: rotation of the crown relative to the implant. The patent also makes clear that the importance of the non-round shape is not limited to particular preferred embodiments of the invention; rather, “[g]enerically speaking, the cross-sectional shape of the boss in accordance with the invention is made non-round such that should the linear edges extending from the surface 44 become rounded there would remain a distinct non-round cross section for the boss.” (*Id.* col.12 ll.16-20 (emphasis added).)

In keeping with the patent’s emphasis on the importance of the boss’s non-round shape, when deviations from strictly polygonal cross sections are to be covered by the invention’s scope, the specification takes particular care to inform the reader that this is so. For example, the specification states that “[w]hereas the figures have illustrated bosses having different polygonal

cross sections that are defined by straight lines and crisp intersections of those lines, it should be understood that rounded and bevelled edges, are intended to fall within the scope of the invention.” (*Id.* col.11 ll.26-30.) The patent takes particular care to reemphasize the importance of the non-round, polygonal shape of the boss with respect to embodiments having edges that are not strictly linear, noting that “any generally axially oriented side surface of a boss may include a bulge or concavity *so long as the basic polygonal shape is retained.*” (*Id.* col.11 ll.30-32 (emphasis added); *see also id.* col.12 l.66-col.13 l.3 (“Each of the polygons can be altered such that sides become concave or convex curves and corners can be rounded so long as the resultant shape retains the desired non-round characteristic that resist [sic] turning and wear by an attached prosthesis element.”).) The non-round shape of the boss therefore occupies a place of primary importance in the invention, as it can, with or without radial slots, protect against unwanted rotation. (*See id.* col.13 ll.36-40 (“[A] crown, for example, having a recess with a square cross section so as to match an implant of FIG. 10a, need not have protrusions that match the slots 94’, as these slots are basically intended for installing the implant in the jaw bone.”).)

Given the importance of the overall non-round shape to the invention’s purpose of preventing rotation of the crown relative to the implant, it is unsurprising that the patent’s use of “cross section” consistently refers to the overall cross-sectional shape of the boss. (*See, e.g., id.* col.1 ll.41-45 (“A false tooth or crown is provided with a hole therethrough . . . and a non-round recess in its base corresponds in shape to the protruding non-round cross section of the abutment”); *id.* col.3 ll.51-52 (“Many cross sections are available for the protrusion to provide a non-round shape.”); *id.* col.4 ll.54-60 (“A hexagonal boss 42 on the implant 12 protrudes above a surface 44 of a flange 45 of the implant 12. . . . Thereby, rotation of the crown 22 about the longitudinal axis 49 of the implant is prevented by the hexagonal cross-section.”); *id.* col.12

ll.21-24 (“The hexagonal shape of the prior art and any regular polygon cross section having five, six or more regular sides is vulnerable to circular rounding as vertical edges become worn.”).) The specification also implies that the cross-sectional shape runs along the entire height of the boss, as the patent is careful to note that any wear or rounding in the “vertical” or “axial” edges, not simply portions thereof, do not affect the ability of the invention’s non-round cross sections to prevent rotation. (*See id.* col.12 ll.25-28 (“On the other hand, convex polygons as shown, for example, in FIGS. 9-16, present non-round cross sections for the bosses even when the vertical edges become worn and rounded.”); *id.* col.12 ll.28-31 (“Additionally, many nonconvex polygons would make excellent boss cross sections and retain their non-round shape and utility even when the linear axial edges are rounded.”); *id.* col.12 ll.44-48 (“In each instance the protrusion from the surface 44 provides a distinctly non-round cross section while providing good anti-rotational anchorage for an abutment or crown combination regardless of wear that may occur along the vertical edges . . . .”)).) The specification uses “cross section” to denote the overall cross-sectional shape of the entire boss even when the former term is used with the indefinite article “a.” (*See, e.g., id.* col.9 ll.26-29 (“In an implant 90 of FIG. 9, a boss 92 having *a cross section* that is a rectangle, in this instance a square, as compared to the *hexagonal boss* of the prior art, is elevated above the surface 44 of a flange 45 on the implant 90.” (emphasis added)); *id.* col.12 ll.16-20 (“Generically speaking, *the cross-sectional shape of the boss* in accordance with the invention is made non-round such that should the linear edges extending from the surface 44 become rounded there would remain *a distinct non-round cross section* for the boss.” (emphasis added); *id.* col.12 ll.39-42 (“Regular *hexagonally shaped bosses*, by addition of internal and/or external flutes or other formations, maintain *a non-round cross section* when the axial edges are rounded.” (emphasis added))).) And although the specification

uses the plural “cross sections” numerous times, it is always in reference to multiple types of bosses; not once in the patent is “cross sections” used to refer to different cross sections of the same boss. (*See, e.g., id.* col.12 ll.25-28 (“On the other hand, convex polygons as shown, for example, in FIGS. 9-16, present non-round cross sections for the bosses even when the vertical edges become worn and rounded.”).)

In light of the consistent equating of the overall shape of the boss and of the term “cross section” in the specification, it is difficult to maintain, as Small does, that a person having ordinary skill in the art would then interpret “a non-round cross section as viewed along said axis” to allow the boss to have different round and non-round cross sections in addition to the one non-round cross section needed to fall within the scope of the claim. Small protests based on the Federal Circuit’s decision in *Baldwin Graphic Systems, Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008), where the court noted that it “has repeatedly emphasized that an indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’” The court further advised that this principle was “best described as a rule,” that exceptions were “extremely limited: a patentee must ‘evinced[] a clear intent’ to limit ‘a’ or ‘an’ to ‘one’”; specifically, “where the language of the claims themselves, the specification, or the prosecution history necessitate a departure from the rule,” an exception exists. 512 F.3d at 1342-43 (quoting *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000)).

But *Baldwin Graphic* is unpersuasive for two reasons. First, because the ‘945 Patent consistently uses cross section to refer to the overall cross-sectional shape of the boss, it is not dispositive that “a” generally means one or more. In this case, a boss having “a non-round cross section,” viewed in light of the specification, is best interpreted as a boss whose shape is a

characterized by a non-round cross section. With such an interpretation of “cross section,” it makes little sense to construe the phrase as allowing more than one type of cross section in the boss.

Second, the intrinsic evidence does evince an intent to treat “a” as “one” in this case. The claim recites “a non-round cross section as viewed *along* said axis.” (‘945 Patent col.15 ll.7-8 (emphasis added).) And “along” means “[t]hrough the whole or entire length of; from end to end of.” 1 *Oxford English Dictionary* 358 (2d ed. 1991). The claim language itself, therefore, recites “a” non-round cross section that extends “through the whole or entire length of” the longitudinal axis. In light of the specification’s treatment of “cross section” as synonymous with the entire cross-sectional shape of the boss, and the claim’s recitation of “a non-round cross section” viewed along the longitudinal axis, the intrinsic evidence makes clear that the shape of cross section to which the claim refers is to run all along the longitudinal axis, *i.e.*, vertically along the boss.

It goes too far, however, to require, as Implant Direct does, a “constant” cross section. The specification requires only a generally consistent shape to prevent rotation; slight variations from the wearing down of edges and curves in the side surfaces are all specifically described as being within the scope of the invention. The Court accordingly modifies Implant Direct’s construction and construes “a non-round cross section as viewed along said axis” to mean “a generally consistent cross section at every depth of the boss that is not circular as viewed along said axis.”

As for “axially extending side surfaces,” it is difficult to reconcile the claim’s recitation of the “non-round cross section” as “being defined by said side surfaces” with Small’s definition of “the side surface areas of the boss which extend in the axial direction of the implant body.”



Small contends that the limitation requires “only that the boss have one or more axially extending side surfaces.” (Pl.’s ‘945 Reply at 17.) Of course, if the boss had only one axially extending side surface, it would be impossible for that side surface to define a non-round cross section since, as a matter of mathematical logic, one side surface cannot define a non-round cross-sectional shape.

Small does not explain this apparent inconsistency. Instead, Small relies on the word “having” in the claim, arguing that because “[i]t is generally accepted that the term ‘having’ in a claim is given the same open-ended meaning as ‘comprising’ and ‘including,’ meaning that features other than those recited may be present,” the “inclusion of side surfaces that extend in the axial direction does not preclude the boss from having side surfaces which do not extend in the axial direction.” (Pl.’s ‘945 Reply at 17-18.) It is true that “[t]he transition ‘having’ can also make a claim open,” although “the term ‘having’ does not convey the open-ended meaning as strongly as ‘comprising.’” *Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1348 (Fed. Cir. 2001). “‘Having,’ for instance, does not create a presumption that the body of the claim is open.” *Id.* Whether “having” conveys an open-ended claim, however, is a bit of a non sequitur. Even with open-ended terms, the limitations introduced with the open-ended transition word must still limit the scope of the claim to devices or methods that have those limitations. *See Ricoh Co. v. Quanta Computer Inc.*, 550 F.3d 1325, 1333 (Fed. Cir. 2008) (“Although the use of ‘comprising’ in a claim’s preamble ‘raises a presumption that the list of elements is nonexclusive,’ the enumerated steps of a method claim must nevertheless ‘all be practiced as recited in the claim for a process to infringe.’” (quoting *Dippin’ Dots, Inc. v. Mosey*, 476 F.3d 1337, 1343 (Fed. Cir. 2007))).

Thus the real question here is whether “having axially extending side surfaces” here is to be understood by a person having ordinary skill in the art as generally requiring the boss’s side surfaces to be axially extending or as requiring only that some side surfaces be axially extending. That is, the phrase can be read either as requiring a boss “whose side surfaces are axially extending” or a boss “with some axially extending side surfaces.” The former reading accords better with the specification and claim language, and it is the one the Court adopts here.

The specification does not use the term “axially extending.” It uses “side surfaces” only twice. First, the patent teaches that “any *generally axially oriented* side surface of a boss may include a bulge or concavity so long as the basic polygonal shape is retained.” (‘945 Patent col.11 ll.31-33 (emphasis added).) And second, it teaches that “[f]or enhanced holding power, internal or external flutes may be added to any side surface of the cross sections.” (*Id.* col.13 ll.5-6.) Both passages support the idea that all of the side surfaces are axially oriented. The first passage is explicit in its description of the side surfaces of the boss as “axially oriented.” And the second teaches that flutes may be added to *any* side surface for enhanced holding power, an assertion that makes sense only if all side surfaces are axially oriented. The flutes block rotation of the crown around the longitudinal axis of the implant by positioning themselves axially within a corresponding recess in the crown or abutment. If any side surface is not axially oriented, however, the flute attached to it cannot so position itself, rendering this part of the specification meaningless. Accordingly, a construction of this phrase requiring all of the side surfaces to extend axially makes more sense when interpreted in light of the specification.

The phrasing of Implant Direct’s proposed definition, however, appears to limit the scope of the phrase a little more than warranted by the specification and claim language. Requiring “substantially parallel” side surfaces and specifying a single exception for “a slight taper to

permit the boss to mate with a corresponding opening in an abutment or crown” appears designed to limit the invention to embodiments that resemble Figure 10b in the ‘945 Patent. As discussed above, the patent’s emphasis is on maintaining the general shape of the cross-section to prevent rotation, not on strictly straight lines at every point in the boss. Aside from its failure to require all side surfaces to be axially extending, Small’s definition otherwise appears to be consistent with the ordinary meaning of “axially extending.” The Court therefore construes the phrase “axially extending side surfaces” to mean “the side surfaces of the boss, all of which extend in the axial direction of the implant body.”

#### **H. “Smooth, Generally Axial Extended Side Surfaces” (Claim 14)**

Small interprets this phrase as “the side surface areas of the recess which extend in the axial direction of the implant body and which do not contain threads.” (Pl.’s ‘945 Opening Br. at 18.) Camlog proposes “non-threaded surfaces extending continuously from the proximal surface to the bottom wall of the recess” as the definition. (Camlog Opening Br. at 13.) The parties’ disagreement centers around two separate questions. First, must the entirety of a side surface be smooth? And second, must every side surface be smooth?

The Court answers both of these questions in the affirmative. First, it is clear from the language that the adjective “smooth” modifies “extended side surfaces” and does not limit its application to only parts of the side surfaces. The word “smooth” appears nowhere else in the patent, and no figure illustrates a side surface of a boss or a recess that is partially smooth. And second, if the Court were to interpret “smooth” as applying only to some side surfaces, it would also have to interpret “generally axial” in the same manner. As discussed above, the requirement that the side surfaces be axially extending or generally axial is one that the specification implies

should be applied to all side surfaces. Accordingly, the Court adopts Camlog's definition for this phrase.

**I. "Elongated Body" (Claim 14)**

Small construes this phrase as "a body that is longer in the axial direction than the radial direction." (Pl.'s '945 Opening Br. at 17.) Camlog contends that the phrase should be given its "plain and ordinary meaning," but does not specify why Small's definition is incorrect or how the plain and ordinary meaning differs from Small's definition. (*See* Camlog Opening Br. at 10; Camlog Responsive Br. at 4; Camlog Reply at 3-4.) The Court does not see a reason that Small's definition is not in accordance with the plain and ordinary meaning of the term. In context, the claim recites "[a] dental implant for insertion in the jaw bone of a patient, comprising: an elongated body having a longitudinal axis and an axial hole . . . ." ('945 Patent col.14 ll.10-13.) It is consistent with the claim language as well as the specification to construe this phrase in accordance with Small's definition, and the Court does so.

**J. "Wherein Said Axial Hole Is Threaded" (Claim 22)**

Small construes this phrase to mean "the axial hole has screw threads along at least part of its length." (Pl.'s '945 Opening Br. at 23.) Camlog claims that Small's construction "is overreaching" and that it "should be rejected out of hand," but offers no intrinsic or extrinsic evidence to support its position or an alternative definition for the Court to evaluate. (Camlog's '945 Responsive Br. at 4.) Instead, Camlog proposes that the phrase be given its "plain and ordinary meaning." (*Id.*) Presumably, Camlog's idea of that meaning would be one in which the screw threads run all the way along the axial hole's length. But Figure 10b from the '945 Patent depicts an axial hole with threads that extend over only part of the hole's length. (*See* '945

Patent fig.10b.) That accords with Small's definition, and the Court construes this phrase accordingly.

**K. "A Recess Extending Into Said Proximal Surface" (Claim 14)**

Small construes this phrase to mean "an opening that extends through the proximal surface into the body of the implant." (Pl.'s '945 Opening Br. at 18.) Camlog contends that it should be limited to "a shallow opening extending into said proximal surface, which is a reversal of a boss." (Camlog Opening Br. at 11.) The Court agrees with Small.

There is nothing inherent about the word "recess" that would imply that the opening must be "shallow." The ordinary meaning of "recess" is "a receding or hollow place, as in a surface, wall, etc.; niche." *Webster's New World College Dictionary* 1120 (3d ed. 1997). Camlog does not contend that the word normally means otherwise, but instead contends the specification cabined the meaning of "recess" to a shallow opening in the following passage:

It should also be understood that a reversal of features is intended to fall within the inventions [sic] scope. Thus any boss cross-section which has been described as protruding from the flange surface 44 may also be formed (and viewed in the Figures) as a recess in the surface 44. In such a construction the mating crown or abutment is fabricated with a correspondingly shaped protrusion (or protrusions) that seat(s) in the recess (or recesses).

('945 Patent col.13 ll.58-65.) According to Camlog, this passage means that "the only implants having a recess described and claimed in '945 patent [sic] are those in which the recess is a corresponding 'reversal' or inversion of the boss." (Camlog Opening Br. at 11.)

But as discussed above with respect to Small's reading of this passage with respect to her construction of "boss," Camlog overreaches by reading this passage to equate "boss" and "recess" in all respects. The subject of the operative sentence is "boss *cross-section*," not just the "boss." Given the context of the passage, which follows two pages of discussion of the different cross-sectional shapes a boss can take, its intent—conveying that the recess can take the same

potential cross-sectional shapes as a protruding boss—is clear. It reads too much into this passage to argue that it clearly intends Small’s intent to act as her own lexicographer and to confine the use of “recess” to a “shallow opening.” *Helmsderfer*, 527 F.3d at 1381.

#### **L. “Bottom Wall” (Claim 14)**

Small interprets this phrase as “a surface defining the bottom of the recess.” (Pl.’s ‘945 Opening Br. at 19.) Camlog’s definition is “the bottom surface of the recess that seats the mating crown or abutment.” (Camlog’s Opening Br. at 12.) Thus, although the parties generally agree that “bottom wall” denotes the bottom surface of the recess, Camlog seeks to impose the additional requirement that the bottom wall seat the mating crown or abutment.

Camlog relies on two arguments for its extra requirement, but both are unavailing. First, Camlog argues that the following passage from the patent’s specification indicates that the bottom wall must seat the mating crown or abutment:

It should also be understood that a reversal of features is intended to fall within the inventions scope. Thus any boss cross-section which has been described as protruding from the flange surface 44 may also be formed (and viewed in the Figures) as a recess in the surface 44. In such a construction the mating crown or abutment is fabricated with a correspondingly shaped protrusion (or protrusions) that seat(s) in the recess (or recesses).

(‘945 Patent, col. 13, ll.58-65.) But this passage merely states that the mating crown or abutment has a protrusion that seats in the “recess,” and says nothing to indicate that the bottom wall of the recess must seat the crown or abutment.

Second, Camlog argues that Small disclaimed a general interpretation of “bottom wall” as the bottom surface of the recess during prosecution. Camlog notes that during prosecution, the patent examiner rejected the ‘945 Patent as being unpatentable over U.S. Patent No. 5,195,892 (the “Gersberg Patent”) in view of U.S. Patent No. 5,338,197 (the “Kwan Patent”) because it would have been obvious under 35 U.S.C. § 103. (Schilowitz Decl. Ex. D at 2.)

Small then amended her claims, including the substitution of the term “bottom wall” for “transverse face.” (*Id.* Ex. E at 2.) Therefore, according to Camlog, because “[t]he Gersberg Patent contains a ‘surface defining a bottom of the recess,’” the use of “bottom wall” in the amendment must indicate a disclaimer of a construction of “bottom wall” as “surface defining a bottom of the recess.”<sup>6</sup> (Camlog Opening Br. at 12.) But as Small correctly points out, though “[c]lear and unmistakable” statements during prosecution may also disavow claim scope,” the “doctrine of prosecution disclaimer only applies to unambiguous disavowals.” *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1289 (Fed. Cir. 2009) (quoting *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008)). Here, there is no such unambiguous disavowal. Neither the examiner’s rejection nor Small’s amendment make any statement requiring the construction put forth here by Camlog; in fact, they do not cover this topic at all. (*See generally* Schilowitz Decl. Exs. D, E.) Accordingly, the Court adopts Small’s construction as the ordinary meaning of this phrase.

**M. “Said Slots Being Adapted To Engage An Insertion Device Or At Least One Protrusion Of A Dental Prosthesis Or Abutment So As To Fix The Position” (Claim 14)**

In context, claim 14 reads in relevant part:

a plurality of slots penetrating said proximal surface and axially extending only part way down said side surfaces toward said bottom wall, said slots being adapted to engage an insertion device or at least one protrusion of a dental prosthesis or abutment so as to fix the position of the abutment or crown relative to said implant.

(‘945 Patent col.16 ll.19-24.) Small interprets “said slots being adapted to engage an insertion device or at least one protrusion of a dental prosthesis or abutment so as to fix the position” as

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<sup>6</sup> Although Camlog’s brief has this phrase in quotes and cites the Gersberg Patent, Camlog does not offer a pincite to the Gersberg Patent, and the phrase appears nowhere therein.

“slots which are designed to receive either the tool that drives the implant into a patient’s bone or receive a projection from a prosthesis or abutment which locks the prosthesis or abutment from rotational movement.” (Pl.’s ‘945 Opening Br. at 19.) Camlog interprets this to mean “said slots being adapted to engage a device for inserting the implant or at least one protrusion of a dental prosthesis or abutment so as to fix the position.” (Camlog Opening Br. at 16.) The Court adopts Small’s construction.

Camlog’s only objection to Small’s construction is that it is “wholesale redrafting . . . when the phrase itself is relatively easy to understand on its face,” (Camlog Reply at 11), and that “the patent does not state that these things need to be specifically so designed,” (Camlog Responsive Br. at 8). Although the latter objection is technically correct insofar as the patent never explicitly states that the slots should be designed to receive an insertion device or a protrusion from a prosthesis or abutment, a person having ordinary skill in the art would so read this phrase in light of the specification. For example, the specification teaches:

Additionally, the slots 94 are provided for the purpose of screwing the implant into the bone. . . . The tool which is used for threading the implant 90 into the bone of a patient (not shown) is constructed such that it rotates the implant 90 by tool engagement with the slots 94 and not because of any driving engagement with the sides 96 of the boss 92. Thus, the surfaces of the boss 92 do not become damaged by the insertion tool upon the initial installation of the implant into the jaw bone, and the contours of the boss 92 are preserved for accurate and effective mating with the abutment and/or crown.

To further assure the fixed relative position between the implant and that which is externally attached to it, the abutment or crown that interfaces with the implant 90 may be made with protrusions that engage in the slots 94 at the interface.

(‘945 Patent col.9 l.55-col.10 l.5.) This passage provides support both for the idea that the slots are designed to receive the tool driving the implant into the bone and that they are used to receive protrusions to prevent rotational movement. The specification also provides that the “slots are basically intended for installing the implant in the jaw bone” but “as a redundancy measure and



for additional anti-rotation resistance, protrusions on the crown's lower surface that correspond with the slots may also be included in conjunction with the squared recess." (*Id.* col.13 ll.39-44.) This is also consistent with Small's construction. Camlog offers only conclusory argument in response and does not identify any substantive reason why Small's construction does not accord with the understanding of the claim language by a person having ordinary skill in the art. Accordingly, the Court adopts Small's construction.

**N. "Axially Extending Only Part Way Down" (Claim 14)**

Both Small and Implant Direct agree in substantial part that the basic meaning of this phrase, which refers to how far down the slots in the implant's recess reach, is that the slots cannot touch or penetrate the bottom wall. Accordingly, Small construes this phrase simply as "less than all the way down." (Pl.'s '945 Opening Br. at 20.) Implant Direct, however, seeks to add to the construction that the slots "are completely contained in the side surfaces." (Implant Direct Opening Br. at 22-23.)

Implant Direct's primary argument for adding this language is based on one of its products that are alleged to infringe Small's. (*See* Implant Direct Responsive Br. at 15-16.) But "[c]laims are properly construed without the objective of capturing or excluding the accused device." *Vita-Mix Corp. v. Basic Holding, Inc.*, 581 F.3d 1317, 1324 (Fed. Cir. 2009) (citing *NeoMagic Corp. v. Trident Microsystems, Inc.*, 287 F.3d 1062, 1074 (Fed. Cir. 2002)). And if, as Implant Direct suggests, "[s]ince Dr. Small has now agreed that the slots required by claim 14 may not touch or penetrate into the bottom wall, it follows that the slots are completely contained in the side surfaces," (Implant Direct Reply at 8), it is unnecessary for the Court to make that inference on Implant Direct's behalf at the claim construction phase. Accordingly, the Court adopts Small's construction.

**O. “A Plurality of Slots Penetrating Said Proximal Surface” (Claim 14)**

Small construes this phrase to mean “at least two slots penetrating the proximal surface.” (Pl.’s ‘945 Opening Br. at 21.) Implant Direct’s considerably longer construction defines it as “openings in the proximal surface. The openings must extend to and penetrate the proximal surface. The shape of the openings can vary [sic] along their length or depth.” (Implant Direct Opening Br. at 24.) The Court adopts Small’s definition.

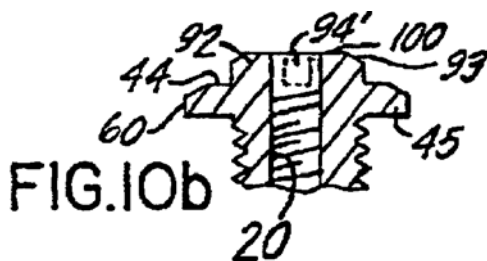
Implant Direct’s reasons for its construction (and the construction itself) are not a model of clarity. But it appears that the construction is derived from the idea that the only slots that conform to claim 14 are indentations made solely into the side surfaces of the recess. (*See* Implant Direct Reply at 7 (“As noted, claim 14 applies to a slot that extends *down the side* of a recess, rather than *radially* as shown in the patent.” (emphasis added)).) Thus, in Implant Direct’s construction of claim 14, the slots’ home base is in the side surfaces of the recess and therefore must “extend to” the proximal surface vertically in order to “penetrate” it. That is, Implant Direct envisions only vertical slots as corresponding to claim 14; thus this claim must be clarified in its estimation to allow the jury to understand that vertically, the slot must reach up to the proximal surface and penetrate it.

It is unclear, however, what evidence Implant Direct has to support this idea. Certainly a slot could exist that extended radially from the central recess of the implant across the proximal surface and also extended axially only part way down the central recess; such a slot, for example, could have an upside-down “L” shape. Implant Direct’s construction therefore appears to lack evidentiary support, and the Court adopts Small’s plain construction of this phrase as being in accordance with its ordinary meaning.

**P. “Said Recess Includes A Beveled Surface” (Claim 16)**

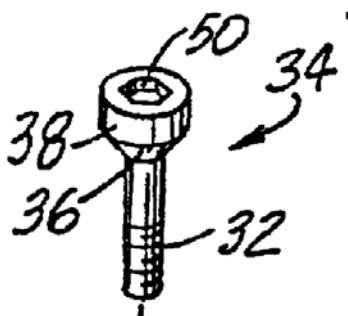
In context, this phrase is part of a claim that reads “[a] dental implant as in claim 14, wherein said recess includes a beveled surface.” (See ‘945 Patent col.16 ll.27-28; ‘945 Patent Certificate of Correction issued December 22, 2009.) Small construes this phrase to mean “the recess contains two surface areas that do not meet at a right angle.” (Pl.’s ‘945 Opening Br. at 22.) Nobel construes the phrase to mean “the recess includes a surface with an edge that is angled relative to the remainder of the surface.” (Nobel’s ‘945 Opening Br. at 22.) The Court agrees with Small.

Nobel argues that the specification indicates that “a bevel is something made on the *edge* of a surface.” (Nobel’s ‘945 Responsive Br. at 14 (emphasis in original).) Nobel bases its argument on Figure 10b of the patent (shown below) as well as the accompanying specification text, which states that “[t]he boss 92 is bevelled (similar to FIG. 10b) at its upper edges 93.” (‘945 Patent, col.9 ll.49-50.)



“Bevelled” is used twice more in connection with edges. In the first reference, the patent discloses that “[w]hereas the figures have illustrated bosses having different polygonal cross sections that are defined by straight lines and crisp intersections of those lines, it should be understood that rounded and beveled edges, are intended to fall within the scope of the invention.” (*Id.* at col.11 ll.26-30.) The second states that “in production [nonconvex polygonal] bosses can be made with beveled or rounded edges, and still be effective for implants.” (*Id.* col.12 ll.30-32.)

But these uses of “beveled” must be understood with respect to the noun that “beveled” modifies. When “beveled” is used with respect to an edge, it certainly fits within Nobel’s construction of the phrase: an edge that is angled relative to the remainder of the surface. But the specification, in describing the prior art, also mentions that “[t]hreads 32 of a screw 34 engage the tapped hole 20 until a *bevel surface* 36 on the screw bead 38 engages a shoulder 40 on the crown 22.” (*Id.* col.4 ll.62-64.) And as seen in the drawing to which that sentence refers (seen below), the bevel surface to which this part of the specification refers does not have edges that are angled relative to the remainder of the surface, but accords with Small’s definition: it does not meet another surface at a right angle.



Thus, Nobel’s construction contradicts this use of “bevel” in the specification, where it refers specifically to a “surface,” rather than an “edge.” Small’s definition therefore would appear to be correct, and dictionary definitions are in accord. *See, e.g., Webster’s New World College Dictionary* 134 (3d ed. 1997) (defining “bevel” as “an angle other than a right angle” or “sloping part or surface, as the angled edge of plate glass” when defined as a noun, and “to cut to an angle other than a right angle” when defined as a verb). Accordingly, the Court accepts Small’s definition for this phrase.

**Q. “Bottom Wall of Said Recess Is Substantially Planar” (Claim 21)**

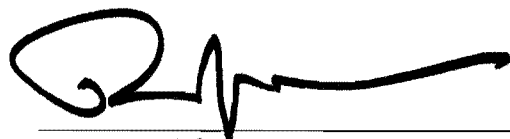
The dispute here is how to construe “substantially planar.” Small construes it as “substantially flat,” whereas Nobel construes it as “substantially planar when viewed in three dimensions.” Neither side identifies any particular substantive reason why their definitions differ from each other or why the other’s construction is actually incorrect. Accordingly, the Court declines to construe this phrase, as “[c]laim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.” *U.S. Surgical Corp.*, 103 F.3d at 1568.

### CONCLUSION

The Court construes the disputed claim terms in the '246 and '945 Patents as set forth in this Opinion.

SO ORDERED.

Dated: New York, New York  
August 11, 2011

A handwritten signature in black ink, consisting of a large, stylized 'R' followed by a series of connected loops and a long horizontal stroke ending in an arrowhead.

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Richard J. Holwell  
United States District Judge